

What is claimed is:

1. A method for controlling an air conditioner having a multi-compressor comprising the steps of:

5 pre-storing a compressing capacity of compressors by a temperature difference between a previous room temperature and a desired temperature predetermined by a user; and

varying the pre-stored compressing capacity based on a temperature difference between a present room temperature and the desired temperature.

10 2. The method of claim 1, wherein the pre-stored compressing capacity is varied by selectively operating compressors having the same compressing capacity and compressors having different compressing capacities on the basis of the temperature difference between the present room temperature
15 and the desired temperature.

3. The method of claim 1, wherein in the step of varying the pre-stored compressing capacity, the pre-stored compressing capacity is varied on the basis of the temperature difference between the present room temperature and
20 the desired temperature in order to increase a speed that corresponds to a cooling load or a heating load.

4. The method of claim 1, wherein the step of varying the pre-stored compressing capacity comprises the steps of:

25 when the present room temperature reaches a lower limit temperature

which is less than the desired temperature predetermined by a user under a state that the air conditioner is in a cooling mode, varying the pre-stored compressing capacity into a compressing capacity for maintaining the lower limit temperature and then operating the compressors with the varied compressing capacity; and

5 operating the compressors with the varied compressing capacity for a predetermined time, then detecting a temperature difference between a present room temperature and the desired temperature, and then re-varying the varied compressing capacity into a predetermined compressing capacity according to the detected temperature difference and thereby operating the compressors.

10 5. The method of claim 1, wherein the step of varying the pre-stored compressing capacity comprises the steps of:

when the present room temperature reaches an upper limit temperature which is more than the desired temperature under a state that the air conditioner is
15 in a heating mode, varying the pre-stored compressing capacity into a compressing capacity for maintaining the upper limit temperature and then operating the compressors with the varied compressing capacity; and

operating the compressors with the varied compressing capacity for a predetermined time, then detecting a temperature difference between the present
20 room temperature and the desired temperature, and then re-varying the varied compressing capacity into a predetermined compressing capacity according to the detected temperature difference and thereby operating the compressors.

6. The method of claim 1, wherein the compressing capacity is
25 preset according to a ratio between the number of compressors mounted in the air

conditioner and a compressing capacity of the compressors.

7. The method of claim 1 further comprising the steps of:

when a compressing capacity corresponding to a present operation mode
5 is equal to a compressing capacity corresponding to a maximum operation mode
after varying the compressing capacity of the compressors, operating the
compressor in the maximum operation mode;

when the compressing capacity corresponding to the present operation
mode is smaller than the compressing capacity corresponding to the maximum
10 operation mode, comparing the compressing capacity corresponding to the
present operation mode with a compressing capacity corresponding to a previous
operation mode, and as the result, if the compressing capacity corresponding to
the present operation mode is smaller than the compressing capacity
corresponding to the previous operation mode, operating the compressors in the
15 previous operation mode; and

when the compressing capacity corresponding to the present operation
mode is larger than the compressing capacity corresponding to the previous
operation mode, operating the compressors in the present operation mode,

wherein the maximum operation mode is a mode for operating the
20 compressors with a total compressing capacity of the multi-compressor, and the
previous mode is a mode for operating the compressors with a pre-stored
compressing capacity.

8. A method for controlling an air conditioner having a multi-
25 compressor comprising the steps of:

pre-storing a compressing capacity of compressors by a temperature difference between a previous room temperature and a desired temperature;

when a present room temperature reaches a lower limit temperature which is less than a desired temperature predetermined by a user under a state that the
5 air conditioner is in a cooling mode, varying the pre-stored compressing capacity into a compressing capacity for maintaining the lower limit temperature and then operating the compressors with the varied compressing capacity; and

operating the compressors with the varied compressing capacity for a predetermined time, then detecting a temperature difference between a present
10 room temperature and the desired temperature, and then re-varying the varied compressing capacity into a predetermined compressing capacity according to the detected temperature difference and thereby operating the compressors.

9. The method of claim 8, wherein the step of re-varying the varied
15 compressing capacity and thereby operating the compressors comprises the steps of:

when a temperature difference between the present room temperature and the desired temperature is more than a first reference value, increasing the varied compressing capacity by a first predetermined value;

20 when the temperature difference between the present room temperature and the desired temperature is less than the first reference value and more than a second reference value, increasing the varied compressing capacity by a second predetermined value;

when the temperature difference between the present room temperature
25 and the desired temperature is less than the second reference value and more

than a third reference value, maintaining the varied compressing capacity; and

when the temperature difference between the present room temperature and the desired temperature is less than the third reference value, decreasing the varied compressing capacity by the first predetermined value.

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10. The method of claim 9, wherein the first reference value is 2°, the second reference value is 1°, and the third reference value is 0°.

11. The method of claim 8, wherein the compressing capacity is
10 preset according to a ratio between the number of compressors mounted in the air conditioner and a compressing capacity of the compressors.

12. The method of claim 8 further comprising the steps of:
when a compressing capacity corresponding to a present operation mode
15 is equal to a compressing capacity corresponding to a maximum operation mode after varying the compressing capacity of the compressors, operating the compressor in the maximum operation mode;

when the compressing capacity corresponding to the present operation mode is smaller than the compressing capacity corresponding to the maximum
20 operation mode, comparing the compressing capacity corresponding to the present operation mode with a compressing capacity corresponding to a previous operation mode, and as the result, if the compressing capacity corresponding to the present operation mode is smaller than the compressing capacity corresponding to the previous operation mode, operating the compressors in the
25 previous operation mode; and

when the compressing capacity corresponding to the present operation mode is larger than the compressing capacity corresponding to the previous operation mode, operating the compressors in the present operation mode,

wherein the maximum operation mode is a mode for operating the compressors with a total compressing capacity of the multi-compressor, and the previous mode is a mode for operating the compressors with a pre-stored compressing capacity.

13. A method for controlling an air conditioner having a multi-compressor comprising the steps of:

pre-storing a compressing capacity of compressors by a temperature difference between a previous room temperature and a desired temperature;

when a present room temperature reaches a lower limit temperature which is less than a desired temperature predetermined by a user under a state that the air conditioner is in a cooling mode, varying the pre-stored compressing capacity into a compressing capacity for maintaining the lower limit temperature and then operating the compressors with the varied compressing capacity;

operating the compressors with the varied compressing capacity for a predetermined time, then detecting a temperature difference between a present room temperature and the desired temperature, and then re-varying the varied compressing capacity into a predetermined compressing capacity according to the detected temperature difference and thereby operating the compressors;

when a compressing capacity corresponding to a present operation mode is equal to a compressing capacity corresponding to a maximum operation mode after varying the compressing capacity of the compressors, operating the

compressor in the maximum operation mode;

when the compressing capacity corresponding to the present operation mode is smaller than the compressing capacity corresponding to the maximum operation mode, comparing the compressing capacity corresponding to the present operation mode with a compressing capacity corresponding to a previous operation mode, and as the result, if the compressing capacity corresponding to the present operation mode is smaller than the compressing capacity corresponding to the previous operation mode, operating the compressors in the previous operation mode; and

when the compressing capacity corresponding to the present operation mode is larger than the compressing capacity corresponding to the previous operation mode, operating the compressors in the present operation mode,

wherein the maximum operation mode is a mode for operating the compressors with a total compressing capacity of the multi-compressor, and the previous mode is a mode for operating the compressors with a pre-stored compressing capacity.